AMENDMENTS TO THE CLAIMS:

The following listing of claims supersedes all prior versions and listings of claims in this application:

1-22. (Cancelled)

23. (Currently Amended) A method according to claim [[22]] 24, wherein the set of voltage measurements collected over said measurement period is used to produce an image representing the distribution of impedance within the body.

24. (Previously Presented/Allowed) A method for monitoring the response of a nervous system of a body to a sensory stimulus, said method comprising:

providing a plurality of electrodes on a surface of the body and passing current between selected areas of the surface of the body by passing current between at least one pair of electrodes of said plurality of electrodes, said current being provided by a current source external to said body; and

collecting a set of voltage measurements between selected ones of said plurality of electrodes while said current is passing between said at least one pair of electrodes;

wherein the set of voltage measurements is collected over a predetermined measurement period, the predetermined measurement period is initiated after a predetermined delay based upon a neurological model following occurrence of the sensory stimulus, and the collected voltage measurements are compared with reference measurements to determine normal or abnormal response of the nervous system,

the sensory stimulus comprises a series of second stimuli,

a set of voltage measurements is collected during current injection periods initiated after application of each second stimulus, the collection of voltage measurements related to each second stimulus is initiated at a time delay relative to the respective second stimulus, and

the time delay differs for each second stimulus, and differences between collected sets of voltage measurements are interpreted as representing changes in nervous system activity over the time difference between the respective time delays.

25. (Previously Presented/Allowed) A method according to claim 24, wherein each set of voltage measurements is used to produce a respectively corresponding image representing the distribution of impedance within the body and the thus produced images are compared with each other to identify changes in nervous system activity.

26. (Currently Amended) A method according to claim [[22]] 24, wherein the applied sensory stimulus is a visual or an auditory stimulus.

27. (Currently Amended) A method according to claim [[22]] 24, wherein measured voltage measurements are filtered using a Kalman filter.

28. (Currently Amended) A method according to claim [[22]] 24, further comprising applying the sensory stimulus.

29. (Currently Amended) A method according to claim [[22]] 24, wherein when application of the sensory stimulus is detected, said detection starts measurement of said time delay.

30. (Previously Presented) A method according to claim 29, wherein the sensory stimulus occurs spontaneously.

31. (Previously Presented) A method according to claim 30, wherein the sensory stimulus is a feature of an environment in which the body is located.

32-34. (Cancelled)

35. (Currently Amended) A method according to claim [[32]] 24, wherein said ~~regions and/or~~ areas are selected on the basis of a neurological model of the nervous system and the applied sensory stimulus such that sensitivity of the derived impedance measurements to changes in [[the]] a predetermined part of the nervous system is enhanced.

36-42. (Cancelled)

43. (Previously Presented/Allowed) A method for monitoring nervous system response to a sensory stimulus, said method comprising:

(a) applying a predetermined sensory stimulus to a nervous system of a living subject;

(b) after an initial time delay, injecting electrical current through at least a first pair of electrodes affixed to the head of said subject for a first current injection time period;

(c) during said first current injection time period, measuring electrical voltage between further pairs of electrodes also affixed to the head of said subject;

(d) subsequent to said first current injection time period, again injecting electrical current through at least another pair of said electrodes for another current injection time period;

(e) during said another current injection time period, measuring electrical voltages across other pairs of said electrodes;

(f) repeating steps (d) and (e) a predetermined number of times;

(g) creating an image of brain activity in said subject based on said measured electrical voltages;

(h) repeating steps (a)-(g) for different initial time delays so as to monitor for physiological responses of specific respectively corresponding different parts of the nervous system to derive a time sequence of images revealing nervous system responses to said predetermined sensory stimulus in said corresponding different parts of the subject's brain; and

(i) outputting said sequence of images to a display.

44-50. (Cancelled)

51. (New) An apparatus for monitoring the response of a nervous system of a body to a sensory stimulus, said apparatus comprising:

means for providing a plurality of electrodes on a surface of the body and passing current between selected areas of the surface of the body by passing current between at least one pair of electrodes of said plurality of electrodes, said current being provided by a current source external to said body; and

means for collecting a set of voltage measurements between selected ones of said plurality of electrodes while said current is passing between said at least one pair of electrodes;

wherein the set of voltage measurements is collected over a predetermined measurement period, the predetermined measurement period is initiated after a predetermined delay based upon a neurological model following occurrence of the sensory stimulus, and the collected voltage measurements are compared with reference measurements to determine normal or abnormal response of the nervous system,

the sensory stimulus comprises a series of second stimuli,

a set of voltage measurements is collected during current injection periods initiated after application of each second stimulus, the collection of voltage measurements related to each second stimulus is initiated at a time delay relative to the respective second stimulus, and

the time delay differs for each second stimulus, and differences between collected sets of voltage measurements are interpreted as representing changes in nervous system activity over the time difference between the respective time delays.

52. (New) An apparatus according to claim 51, wherein each set of voltage measurements is used to produce a respectively corresponding image representing the distribution of impedance within the body and the thus produced images are compared with each other to identify changes in nervous system activity.

53. (New) An apparatus according to claim 51, wherein the applied sensory stimulus is a visual or an auditory stimulus.

54. (New) An apparatus according to claim 51, wherein measured voltage measurements are filtered using a Kalman filter.

55. (New) An apparatus according to claim 51, further comprising applying the sensory stimulus.

56. (New) An apparatus according to claim 51, including means for detecting application of the sensory stimulus to start measurement of said time delay.

57. (New) An apparatus according to claim 56, wherein the sensory stimulus occurs spontaneously.

58. (New) An apparatus according to claim 57, wherein the sensory stimulus is a feature of an environment in which the body is located.

59. (New) An apparatus according to claim 51, wherein said areas are selected on the basis of a neurological model of the nervous system and the applied sensory stimulus such that sensitivity of the derived impedance measurements to changes in a predetermined part of the nervous system is enhanced.

60. (New) An apparatus according to claim 51, including means for using the set of voltage measurements collected over said measurement period to produce an image representing the distribution of impedance within the body.

61. (New) An apparatus for monitoring nervous system response to a sensory stimulus, said apparatus comprising:

(a) means for applying a predetermined sensory stimulus to a nervous system of a living subject;

(b) means for, after an initial time delay, injecting electrical current through at least a first pair of electrodes affixed to the head of said subject for a first current injection time period;

(c) means for, during said first current injection time period, measuring electrical voltage between further pairs of electrodes also affixed to the head of said subject;

(d) means for, subsequent to said first current injection time period, again injecting electrical current through at least another pair of said electrodes for another current injection time period;

(e) means for, during said another current injection time period, measuring electrical voltages across other pairs of said electrodes;

(f) means for repeatedly using means (d) and (e) a predetermined number of times;

(g) means for creating an image of brain activity in said subject based on said measured electrical voltages;

(h) means for repeatedly using means (a)-(g) for different initial time delays so as to monitor for physiological responses of specific respectively corresponding different parts of the nervous system to derive a time sequence of images revealing nervous system responses to said predetermined sensory stimulus in said corresponding different parts of the subject's brain; and

(i) means for outputting said sequence of images to a display.